

METHOD AND SYSTEM FOR ACCESSING INTERACTIVE MULTIMEDIA INFORMATION OR SERVICES FROM BRAILLE DOCUMENTS

FIELD OF THE INVENTION

[0001] The present invention relates generally to the accessibility, by blind and vision impaired people, to interactive hypermedia systems such as the Web directly from Braille documents.

BACKGROUND

[0002] Accessibility

[0003] Many groups in academia, government, and private industry are working on ways to guarantee universal access to the on-line world for all segments of society. This social movement, combined with a strong push to provide better accessibility in the workplace, is driving an increasingly urgent call for novel technologies.

[0004] As information technology (IT) penetrates all commercial and public transactions and communications, worldwide advocates for people with disabilities have demanded accessibility for everyone. In response, governments have begun to require IT to be accessible for people with disabilities through new regulations and standards. In the United States, for example, federal, state and local governments have initiated legislation requiring computer technology to be accessible to people with disabilities (refer to web site www.access-board.gov). Many other countries have established regulations that mandate accessibility at some level, or they are in the process of developing them. In addition, international standards organizations have been working to develop accessibility standards.

[0005] Accessibility Aids for Blind People

[0006] For someone who is completely unable to use a normal screen or read printed text, there are two alternatives: Braille and Speech. The assistance of blind and visually impaired people encompasses today a wide range of technical solutions from interactive speech software and cognitive tools, to screen reader software, screen enlargement programs, keyboard access utilities, and so forth.

[0007] Screen Readers convert text to speech, allowing blind or vision-impaired users to hear what is displayed on their computer screen. For example, "Jaws for Windows" is a computer screen-reader application from Henter-Joyce. It operates with Windows NT 4.0, Windows 98 and Windows 95 and includes an enhanced software speech synthesizer for speaking in several languages. Note: Windows is a trademark of Microsoft Corporation, a company with corporate headquarters in Redmond, Wash., USA.

[0008] Web Page Readers read aloud Web-based text just as it appears on enabled Web pages. For example, "Home Page Reader" of IBM, understands HTML (Hypertext Markup Language), the programming language used to design Web pages. It can accurately read text in tables, or included in graphic descriptions, thus allowing blind users to navigate easily on the Web. Note: IBM is a trademark of International Business Machines Corporation, a company with corporate headquarters in Armonk, N.Y., USA.

[0009] Mail Readers use a screen reader for converting the text of an e-mail to speech. For example, the built-in features

of "Lotus Notes Release 5" by IBM enable blind users to check the status of their e-mail (unread, read, deleted), to use calendar functions, and to file and organize documents.

[0010] Scanning Reading Systems first scan the information printed on a physical support. Then, using a speech synthesizer, this information can be read to blind people. For example, "Open Book: Ruby Edition 4.0" by IBM is a program that transforms a computer, a sound card, and a scanner into a complete reading machine for reading books, magazines, memos, bills, and many other printed documents.

[0011] Braille Editing Systems (BES) enable users to input Braille characters from the keyboard. For instance, IBM provides a BES that can be downloaded free of charge from the IBM Web.

[0012] Screen Magnifiers enable users with low-vision to magnify text and images on the computer screen. For example, "MAGic Screen Magnification," from Henter-Joyce, is a screen magnification product for Windows.

[0013] Relevance of Braille

[0014] Braille is a code which enables blind people to read and write. Braille characters are made of a rectangular "cell" comprising six dots in up to 63 combinations. The alphabet, numbers, music notation, and any other symbol that appears in print can be replicated in Braille by arranging the combinations of the six dots. The dots of Braille are also used for mathematics, scientific equations, computer notations, and foreign languages. Braille is embossed by hand or with a machine onto thick paper, and read by touching the Braille characters, usually using the first finger on one or both hands moving across on top of the dots. Since Braille characters take up three times as much space as print, a set of standard contractions, known as Grade 2 Braille, has been defined to save space. With just 6 dots it is possible to define numbers, punctuation, math, and music. Grade 3 Braille provides an even more contracted form.

[0015] All people need to read, write, and count in order to enjoy intellectual freedom, personal security, and equal opportunities in our society. Braille is the universal alphabet for those whose vision is sufficiently impaired that they cannot read printed documents. Braille is the only reliable method of literacy for blind persons because it enables them to read and write. Thus, blind persons of all ages and in all walks of life need to use Braille in the same ways that sighted persons need to use print.

[0016] Listening is not literacy. Although the use of tape recorders and computers with synthetic speech have recently reduced the use of Braille, listening to a document is not the same thing as reading it. Braille is the best way for children who are blind or visually impaired to develop skills in spelling, grammar, and punctuation. Audio tapes and computers that read a text through a voice synthesizer program provide access to all sorts of written materials, but they fail to give new readers the tools that they need to read and write for themselves and to perform complex tasks independently. For example, although some complex charts and graphs are almost impossible to describe orally, they can clearly be communicated in Braille.